

Appl. No. 10/538,033
Amdt. dated March 11, 2008
Reply to Office action of December 11, 2007

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-28. (Canceled)

29. (Previously presented) An actuator unit having an elongated hollow body (4) which is elastically embodied and which prestresses a piezoelectric actuator (1),

the hollow body (4) having a plurality of recesses and having a joint (31) extending parallel to its longitudinal axis (35), a bridge piece (19) between each pair of adjacent recesses (7, 7a, 7b), the hollow body (4) having a first end (17) and a second end (15), and the recesses (7a, 7b) adjacent to the joint (31) being smaller than the rest of the recesses (7).

30. (Previously presented) An actuator unit comprising an elongated a hollow body (4) having a longitudinal axis (35) and a piezoelectric actuator (1), the hollow body (4) being elastically embodied and prestressing the actuator (1), the hollow body (4) having a plurality of recesses distributed thereover with bridge pieces between adjacent recesses, and having a joint (31) extending parallel to its longitudinal axis (35) with a bridge piece (19.1) between each pair of adjacent recesses (7, 7a, 7b), the bridge piece (19.1) between a recess (7a, 7b) adjacent to the joint (31) and another recess (7) adjacent to that recess being wider than the bridge pieces (19.2) between the rest of the recesses (7).

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31. **(Previously presented)** The actuator unit according to claim 30, wherein the ratio of the width of a bridge piece (19.1) between a recess (7a, 7b) adjacent to the joint (31) and another recess (7) adjacent to that recess (7a, 7b) to the width of the rest of the bridge pieces (19.2) has a value between 1.3 and 1.9, preferably about 1.6.

32. **(Previously presented)** The actuator unit according to claim 30, wherein the widths of the bridge pieces (19.1, 19.2) are dimensioned as a function of the load, and wherein the widths (a, a_1, a_2) of the bridge pieces (19) differ from one another by a factor of about 3.

33. **(Previously presented)** The actuator unit according to claim 30, wherein the recesses (7) are disposed in a number of planes (E_i) and the planes (E_i) extend parallel to one another.

34. **(Previously presented)** The actuator unit according to claim 33, wherein there is an odd number (I , where $I = 11, 13, 15$, or 17 , for example) of planes (E_i) in which the recesses (7) are disposed.

35. **(Previously presented)** The actuator unit according to claim 33, wherein a number of recesses (7) are disposed one after the other in a plane (E_2), and wherein the plane (E_2) intersects the longitudinal axis (35) of the hollow body (4) at a right angle.

36. **(Previously presented)** The actuator unit according to claim 35, wherein a plane (E_2) contains an even number of recesses (7).

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37. **(Previously presented)** The actuator unit according to claim 30, wherein the recesses (7) are embodied as bone-shaped and extend lateral to a longitudinal axis (35) of the hollow body (4).

38. **(Previously presented)** The actuator unit according to claim 37, wherein the recesses (7) are comprised of a middle portion (37) and two head portions (39), the head portions (39) having at least one first radius (R_1), the middle portion (37) having a second radius (R_2), the recesses (7, 7a, 7b) having a length (L), and the following equations apply to the ratios of the recesses (7) disposed in the inner region of the blank to the recesses (7a, 7b) disposed adjacent to the joint (31):

$$R_1(7a, 7b) = 0.867 \times R_1(7)$$

$$R_2(7a, 7b) = 1.317 \times R_2(7)$$

$$L(7a, 7b) = 0.984 \times L(7), \text{ and}$$

width (b) of a halved bridge piece (41) in relation to the joint:

$$b > a/2; \text{ in particular } b = 1.4 \times a/2.$$

39. **(Previously presented)** The actuator unit according to claim 37, wherein the recesses (7a, 7b) adjacent to the joint (31) have the following dimensions:

$$R_1(7a, 7b) = 0.35 \text{ mm to } 0.43 \text{ mm}$$

$$R_2(7a, 7b) = 4.0 \text{ mm to } 8.9 \text{ mm}$$

$$L(7a, 7b) = 3.5 \text{ mm to } 4.5 \text{ mm.}$$

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40. (**Previously presented**) The actuator unit according to claim 34, wherein the recesses (7a, 7b) adjacent to the joint (31) have the following dimensions:

R_1 (7a, 7b) = 0.41 mm to 0.49 mm,

R_2 (7a, 7b) = 5.5 mm to 6.5 mm,

L (7a, 7b) = 3.7 mm to 4.7 mm.

41. (**Previously presented**) The actuator unit according to claim 37, wherein the recesses (7) have the following dimensions:

R_1 (7) = 0.43 mm to 0.51 mm,

R_2 (7) = 4.0 mm to 4.8 mm,

L (7) = 4.5 mm to 5.5 mm.

42. (**Previously presented**) The actuator unit according to claim 37, wherein the recesses (7) have the following dimensions:

R_1 (7) = 0.4 mm to 0.5 mm,

R_2 (7) = 5.5 mm to 6.5 mm,

L (7) = 4.0 mm to 4.5 mm.

43. (**Previously presented**) The actuator unit according to claim 37, wherein the recesses (7) are comprised of a middle portion (37) and two head portions (39), the head portions (39) having at least one first radius (R_1), the middle portion (37) having a second radius (R_2), the recesses (7,

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7a, 7b) having a length (4), the first radii of the head pieces (39) of a recess (7a, 7b) adjacent to the joint (31) are different from each other.

44. **(Previously presented)** The actuator unit according to claim 33, wherein the recesses (7) of two adjacent planes (E_1) are offset (23) from one another.

45. **(Previously presented)** The actuator unit according to claim 44, wherein the offset (23) of the recesses (7) of two adjacent planes is equal to one half the repeat pattern (21) of the recesses (7) of a plane (E_1).

46. **(Previously presented)** The actuator unit according to claim 30, wherein the hollow body (4) has a circular cross section.

47. **(Previously presented)** The actuator unit according to claim 30, wherein the cross section of the hollow body (4) is the shape of a regular polygon.

48. **(Previously presented)** The actuator unit according to claim 30, wherein the hollow body (4) is radially fixed at its first end (17).

49. **(Previously presented)** The actuator unit according to claim 48, wherein the first end (17) of the hollow body (4) is radially affixed to an upper cover plate (6) or an adjusting disk (93) by means of an annular groove (39) or a shoulder.

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50. (**Previously presented**) The actuator unit according to claim 49, wherein the first end (17) of the hollow body (4) being fastened to the upper cover plate (6) by means of welding (41).

51. (**Previously presented**) The actuator unit according to claim 30, wherein the hollow body (4) is radially fixed at its second end (15).

52. (**Previously presented**) The actuator unit according to claim 51, wherein the second end (15) of the hollow body (4) is connected to a lower cover plate (5) or a coupler housing (86).

53. (**Previously presented**) The actuator unit according to claim 52, wherein the second end (15) of the hollow body (4) is fastened to the lower cover plate (5) or a coupler housing (86) by means of welding (41).

54. (**Previously presented**) The actuator unit according to claim 30, wherein the first end (17) and/or the second end (15) of the hollow body (4) has a region that is not perforated by recesses (7, 7a, 7b).

55. (**Previously presented**) The actuator unit according to claim 30, wherein the piezoelectric actuator (1) is disposed inside the hollow body (4) and the prestressed hollow body (4) acts on the piezoelectric actuator (1) with compression.

Claim 56. (**Canceled**)